CLAIMS

1. A method of controlling interference from a transmitter in one communication system to a receiver in another communication system, the method comprising transmitting a beacon from a beacon transmitter associated with the receiver representative of a frequency at which the receiver is trying to receive; listening for the beacon at a beacon receiver associated with the transmitter; and deriving a power spectral density limit for a transmission from the transmitter based upon the strength of the beacon received at the beacon receiver.

2. A method according to claim 1, wherein, for a plurality of beacons received representing the same frequency, the derived transmit power spectral density limit is related to that of the beacon received at the highest power.

3. A method according to claim 1 or claim 2, further comprising comparing the transmit power spectral density limit with a predetermined minimum transmit power spectral density required by the transmitter for that frequency; and transmitting a signal at that frequency, only if the determined transmit power spectral density limit exceeds the minimum.

4. A method according to any preceding claim, wherein a predetermined maximum transmit power spectral density is set, if no beacons are received at the transmitter.

5. A method according to any preceding claim, the method further comprising choosing a transmission frequency for the transmitter which permits the maximum power spectral density for the transmission.

6. A method according to any of claims 1 to 4, wherein the transmission from the transmitter is transmitted at a frequency derived by determining the strongest received beacon which represents any one frequency; thereafter selecting, from the determined strongest beacons, the beacon with the lowest power; and transmitting at the frequency represented by that selected beacon.

7. A method according to claim 5 or claim 6, wherein a transmit power spectral density for a transmission from the transmitter is set dependent upon the strength of the received beacon at the chosen frequency.

8. A method according to any preceding claim, wherein the maximum permitted power spectral density of the transmitter is set at the product of the receiver beacon power; and a factor by which the receiver can be de-sensitised minus one; and the resultant of the receiver noise figure divided by the product of the effective bandwidth at the beacon receiver for receiving the beacon, the minimum signal to noise ratio for receiving the beacon in its effective bandwidth and the noise figure of the beacon receiver at the transmitter.

9. A method according to any preceding claim, wherein a random time division multiple access (TDMA) protocol is applied, whereby beacons representing different frequencies transmit at different times, such that over a series of cycles a beacon representing each frequency will be heard at a different time relative to another particular represented frequency, such that no one frequency at a higher power consistently blocks reception of a beacon representing another frequency at a lower power.

10. A method according to any preceding claim, wherein a code division multiple access (CDMA) protocol is applied, whereby beacons representing different frequencies are distinguished from one another by different codes.

11. A method according to claim 10, wherein a correlation period of a CDMA component of the beacon signal is controlled by an FFT controller.

12. A method according to any preceding claim, wherein each beacon transmits a type identifier and each beacon receiver comprises type specific correlation means, such that a beacon receiver can ignore same type beacons in determining whether or not or how much power to transmit.

13. A method according to any preceding claim, wherein a receiver transmits a beacon only if interference levels exceed an acceptable value.

14. A method according to any preceding claim, wherein the beacon power is adapted to the wanted signal power received at the receiver.

15. A method according to any of claims 1 to 13, wherein the beacon power is adapted to the interference power received at the receiver.

16. A method according to any preceding claim, wherein a bandwidth managed by a beacon is sufficiently narrow that substantial correlation of shadow fading applies across that bandwidth.

17. A method according to any preceding claim, wherein beacon communication is separated from a spectrum that is managed by the beacons by using a different frequency.

18. A method according to claim 17, wherein each beacon occupies a frequency bandwidth which is small compared with the total bandwidth managed by that beacon.

19. A method according to claim 18, wherein neighbouring beacons in a managed bandwidth manage discrete contiguous sections of frequency, each section comprising a fraction of the beacon managed band, each beacon being separated from the frequency bandwidth which it manages by the alternate fraction.

20. A method according to claim 19, wherein each fraction is ½.

21. A method according to any preceding claim, wherein the beacon receiver is periodically tested with an internal beacon of known power and its associated transmitter is prevented from transmitting if a beacon receiver fault occurs.

22. A method according to any of claims 1 to 16 or 21, wherein beacon and system communications are separated in time.

23. A method according to at least claim 9, wherein beacon reception and transmission happen at the same equipment, separated in time, by arranging for reception to take place whenever transmission is not required according to schedules of the random TDMA protocol.

24. A communication network comprising at least one transmitter belonging to one communication system and at least one receiver belonging to another communication system, wherein a beacon transmitter is associated with the at least one receiver and a beacon receiver is associated with the at least one transmitter, whereby a power spectral density limit for transmission at any one transmitter is determined based upon the strength of the or each beacon received at the associated beacon receiver.

25. A transmitter for a communication system, the transmitter being provided with an associated beacon receiver, whereby a power spectral density limit for transmission from the transmitter is determined based on the strength of one or more beacons received at the associated beacon receiver.

26. A receiver for a communication system, the receiver being provided with an associated beacon transmitter, whereby a beacon can be transmitted by the beacon transmitter to control interference, such that a desired maximum power spectral density of interference received at the receiver is satisfied.